

# PATENT ABSTRACTS OF JAPAN

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(71)Applicant : ROUDOU FUKUSHI JIGYODAN

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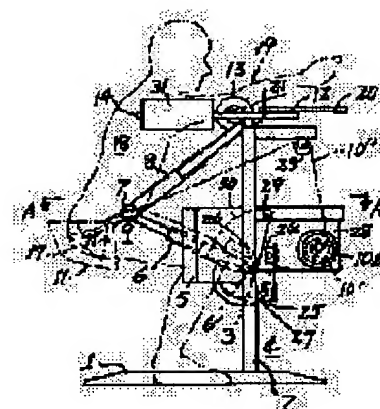
(72)Inventor : MATSUO KIYOMI

## (54) ELECTRIC-POWERED OPERATION DEVICE IN STANDING UP AID

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To help a handicapped who cannot stand up to rise by himself/herself safely using a standing up aid for rehabilitation.

**SOLUTION:** This standing up aid 1 has right and left vertical rods 2, 2 erected on a horizontal base frame 1. The tops of the vertical rods 2, 2 are formed to be extensible in the vertical direction and the vertical rods 2, 2 are connected in the middle by a connecting rod 3 to form a machine frame 4. Long groove type mats 5, 5 are formed in the right/left sides of the front part of the connecting rod 3 to insert a user's knees. And a horizontal rod 7 is attached at the tops of rotatable arms 6 which are pivotally supported at the machine frame 4. Each end of the horizontal rod 7 and the top of an extendable arm 8 pivotally supported at the top of each vertical rod 2 are pivotally connected at a connecting part 9, and the top of each rotatable arm 6 is connected to a backward extension device 10. A seat part 11 can be suspended from the horizontal rod 7, and the tops of the vertical rods 2, 2 are connected by a one-side-open-rectangular horizontal connecting rod 12, and a cylindrical mat 13 for an armrest is attached between the tops of the vertical rods 2, 2. And right and left horizontal arms 14 are attached forward at the tops of the vertical rods 2, 2. Photoelectric tube sensors 24 and 25 are installed upward and downward in the rear of the connecting parts 9, and arms 26 and 27, for photocurrent interception are attached above and below the bases of the rotatable arms 6.



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CLAIMS

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## [Claim(s)]

[Claim 1] It forms elastically. the erection lever of the right and left to a level underframe — setting up — the upper limit of this erection lever — rise and fall — Connect the middle of both the erections lever with a linkage, form a machine frame, and the fluting form mat for knee insertion is prepared in right and left at the anterior part of this linkage. And form a horizontal lever at the tip of the arm which was supported to revolve to the above-mentioned machine frame and which can be rise-and-fall rotated, and the both ends of this horizontal lever and the tip of the elastic arm supported pivotably in the upper part of the erection lever of the above-mentioned right and left are pivoted. Connect to a back pulling device the point of the above-mentioned arm which can be rise-and-fall rotated, and suspension [ carrier / hip ] is possible for the above-mentioned horizontal lever. And it sets in the standing-up auxiliary vessel which connects the upper part of an erection lever on either side with a KO typeface level linkage, prepares the cylinder mat for arm reclining between these upper parts, and comes to prepare the other level arm ahead at right and left in this upper part. Support pivotably the lower limit section of the above-mentioned arm which can be rotated in the center section of the above-mentioned linkage, and an up-and-down photoelectric-tube sensor is formed toward a center section behind [ vertical ] this pivotable support section. And the arm for optical cutoff is crooked or gryposis formed at the upper and lower sides of the base of the above-mentioned arm which can be rotated. The tip of the lower arm for optical cutoff intercepts the light of a lower photoelectric-tube sensor at the time of a before [ the arm which can be rise-and-fall rotated ] Masahiro inclination. The tip of the upside arm for optical cutoff intercepts the light of an up photoelectric-tube sensor at the time of the back smallness inclination of the arm which can be rise-and-fall rotated. The back pulling device of the arm which can be rise-and-fall rotated is put into operation by the above-mentioned cutoff of a lower photoelectric-tube sensor. Motor operation equipment in the standing-up auxiliary machine which consists of a torque limiter with which the motor which came to prepare the control unit which stops back towage of the arm which can be rise-and-fall rotated by the above-mentioned cutoff of an up photoelectric-tube sensor, and this control unit formed in the back pulling device was equipped, and a back smallness inclination limited stopper of the rotation arm which can be gone up and down.

[Claim 2] Claim which prepared the quirk guidance guide of the rotation arm which can be gone up and down in the middle of the fluting form mat for knee insertion on either side, and formed the above-mentioned limited stopper in the back end of this guide positively (1) Motor operation equipment in the standing-up auxiliary machine of a publication.

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[Translation done.]

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the motor operation equipment in the standing-up auxiliary machine of the astasia person who has a handicap in membrum inferius, such as an injury-of-spinal-cord person or a \*\*\*\*\* damage person.

[0002]

[Description of the Prior Art] Since the former and standing-up auxiliary machine had the danger of needing hand winch actuation care since the upper limit section of the arm which can be rise-and-fall rotated was led until it inclined a little back with the hand winch as shown in JP,6-9591,B, having led too much, and hurting one's waist on the contrary, it followed the stopper and has prevented this. Although it stops manually, if electric, in order not to stop, a duplex and three-fold edfety are needed.

[0003]

[Problem(s) to be Solved by the Invention] This invention does not require a care worker but aims at obtaining the motor operation equipment to which trouble back tone can stand up to a standing-up auxiliary vessel safely certainly by switch actuation.

[0004]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, this invention sets up an erection lever on either side to a level underframe. Form elastically, and connect the middle of both the erections lever with a linkage, and a machine frame is formed. the upper limit of this erection lever -- rise and fall -- A horizontal lever is formed at the tip of the arm which prepared the fluting form mat for knee insertion in right and left at the anterior part of this linkage, and was supported to revolve to the above-mentioned machine frame and which can be rise-and-fall rotated. The both ends of this horizontal lever and the tip of the elastic arm supported pivotably in the upper part of the erection lever of the above-mentioned right and left are pivoted. Connect to a back pulling device the point of the above-mentioned arm which can be rise-and-fall rotated, and suspension [ carrier / hip ] is possible for the above-mentioned horizontal lever. And it sets in the standing-up auxiliary vessel which connects the upper part of an erection lever on either side with a KO typeface level linkage, prepares the cylinder mat for arm reclining between these upper parts, and comes to prepare the other level arm ahead at right and left in this upper part. Support pivotably the lower limit section of the above-mentioned arm which can be rotated in the center section of the above-mentioned linkage, and an up-and-down photoelectric-tube sensor is formed toward a center section behind [ vertical ] this pivotable support section. And the arm for optical cutoff is crooked or gryposis formed at the upper and lower sides of the base of the above-mentioned arm which can be rotated. The tip of the lower arm for optical cutoff intercepts the light of a lower photoelectric-tube sensor at the time of a before [ the arm which can be rise-and-fall rotated ] Masahiro inclination. The tip of the upside arm for optical cutoff intercepts the light of an up photoelectric-tube sensor at the time of the back smallness inclination of the arm which can be rise-and-fall rotated. The back pulling device of the arm which can be rise-and-fall rotated is put into operation by the above-mentioned cutoff of a lower photoelectric-tube sensor. The torque limiter with which the motor which came to prepare the control unit which stops back towage of the arm which can be rise-and-fall rotated by the above-mentioned cutoff of an up photoelectric-tube sensor, and this control unit formed in the back pulling device was equipped, The quirk guidance guide of the rotation arm which can be gone up and down is prepared in the middle of the fluting form mat for knee insertion of the motor operation equipment right and left in the standing-up auxiliary machine which consists of a back smallness inclination limited stopper of the rotation arm which can be gone up and

down. It is constituted by the motor operation equipment in the standing-up auxiliary machine given [ above-mentioned ] in the 1st invention which formed the above-mentioned limited stopper in the back end of this guide positively.

[0005]

[Embodiment of the Invention] Trouble back tone's 18 hip 17 which carried out the seat to the bed or the wheelchair is covered with the hip carrier 11, and both-sides \*\*\*\*\*11' of the hip carrier 11 and 11' are connected to the both ends of the horizontal lever 7, or the lower limit of the elastic arms 8 and 8 with the attachment ring 22 free [ attachment and detachment ] by the condition ( drawing 2 ).

[0006] Trouble back tone 18 inserts both the knees 16 and 16 in the fluting form mats 5 and 5 for \*\*\*\*\* in the condition. If a switch is pushed, motor 10' of the back pulling device 10 will rotate, and winding drum 10b will rotate through torque-limiter 10a. Roll round \*\*\*\*\* 10" to winding drum 10b through a guide roller 23, and the upper limit of the arm 6 which can be rise-and-fall rotated is led toward the guide roller 23 of the method of slanting Gokami by \*\*\*\*\* 10." Although the tip of the upside arm 26 for optical cutoff will intercept the light of the up photoelectric-tube sensor 24, will stop motor 10' with the signal and will stop towage if the hip carrier 11 is pulled up, the horizontal lever 7 shifts behind [ some ] the erection levers 2 and 2 and the arm 6 which can be rise-and-fall rotated small-inclines behind [ some ] the erection levers 2 and 2 If the base of the arm 6 which can be rise-and-fall rotated contacts the back smallness inclination limited stopper 29 before that, will open torque-limiter 10a and towage will be stopped. Motor 10' stops immediately after that, a knee and a hip 17 are supported by the above-mentioned fluting form mats 5 and 5 and the hip carrier 11, and trouble back tone 18 stands straight ( drawing 5 ). Moreover, if the hip carrier 11, both-sides \*\*\*\*\*11', 11', etc. are caught in a wheelchair and start the back pulling device 10 by the force more than fixed, since torque-limiter 10a will open and back towage will not be performed, a switch is turned off and motor 10' is stopped.

[0007] Moreover, the arm 6 which can be rise-and-fall rotated can be ahead rotated by actuation opposite to \*\*\*\*\*, and when even a bed or a wheelchair drops the hip carrier 11, trouble back tone 18 can be sat on a bed or a wheelchair. The lower photoelectric-tube sensor 25 is intercepted at the tip of the lower arm 27 for optical cutoff established in the lower part of the above-mentioned arm 6 which can be rotated at that time, with the signal, motor 10' is stopped and torque-limiter 10a is opened.

[0008] And the hip carrier 11 can be demounted from between a bed or a wheelchair, and hips 17, and trouble back tone 18 can lie on the back on a bed, or it can sit on a wheelchair.

[0009]

[Example] It forms elastically. the erection levers 2 and 2 of the right and left to the level underframe 1 — setting up — the upper limit of these erection levers 2 and 2 — rise and fall — Connect the middle of both the erections levers 2 and 2 with a linkage 3, form a machine frame 4, and the fluting form mats 5 and 5 for knee insertion are formed in right and left at the anterior part of this linkage 3. And the horizontal lever 7 is formed at the tip of the arm 6 which was supported to revolve to the above-mentioned machine frame 4 and which can be rise-and-fall rotated. The both ends of this horizontal lever 7 and the tip of the elastic arms 8 and 8 supported pivotably in the upper part of the erection levers 2 and 2 of the above-mentioned right and left are carried out pivoting 9. Connect to the back pulling device 10 the point of the above-mentioned arm 6 which can be rise-and-fall rotated, and suspension [ carrier / 11 / hip ] is possible for the above-mentioned horizontal lever 7. And the upper part of the erection levers 2 and 2 on either side is connected with the KO typeface level linkage 12, the cylinder mat 13 for arm reclining is formed between these upper parts, and the standing-up auxiliary machine which comes to prepare the other level arms 14 and 14 in right and left ahead is formed in this upper part. Carry out and the up-and-down photoelectric-tube sensors 24 and 25 are sideways formed toward a center section behind [ vertical ] this pivotable support section 6'. the above-mentioned arm 6 which can be rotated — the lower limit section — the center section of the above-mentioned linkage 3 — pivotable support 6' — And the arms 26 and 27 for optical cutoff are crooked or gryposis formed at the upper and lower sides of the base of the above-mentioned arm 6 which can be rotated. The tip of the lower arm 27 for optical cutoff intercepts the light of the lower photoelectric-tube sensor 25 at the time of a before [ the arm 6 which can be rise-and-fall rotated ] Masahiro inclination. The tip of the upside arm 26 for optical cutoff intercepts the light of the up photoelectric-tube sensor 24 at the time of the back smallness inclination of the arm 6 which can be rise-and-fall rotated. The back pulling device 10 is put into operation by the above-mentioned cutoff of the lower photoelectric-tube sensor 25, and the control unit 28 which suspends the back pulling device 10 by cutoff of the light of the up photoelectric-tube sensor 24 is formed.

[0010] When it consists of forward reverse motor 10' equipped with torque-limiter 10a, and a back smallness inclination limited stopper 29 of the rotation arm 6 which was formed in the machine frame 4 side and which can be gone up and down and the above-mentioned rotation arm 6 stops by the stopper 29, torque-limiter 10a opens the above-mentioned control unit 28, and it stops back towage.

[0011] The quirk guidance guide 30 of the rotation arm 6 which can be gone up and down is formed in the middle of the fluting form mats 5 and 5 for knee insertion on either side, and it comes to prepare the above-mentioned limited stopper 29 in the back end of this guide 30 positively.

[0012] The upper-part-of-the-body side-face support mat which wound \*\*\*\* and 31 around this arm 14 after preparing what is shown by 14 in \*\*\*\* in the upper limit of the erection levers 2 and 2, An upper limit table pushes up trouble back tone's arm and 20, the erection levers 2 and 2 push up 21, and 19 which the cylinder mat for arm reclining which prepared 13 in the upper limit middle of the erection levers 2 and 2, and 15 make connect \*\*\*\* and 15' to the upper limit of the erection levers 2 and 2 by \*\*\*\*\* is a rise-and-fall upper limit lever.

[0013]

[Effect of the Invention] This invention leads the upper limit of the arm which can be rise-and-fall rotated with a back pulling device as mentioned above. A guide peg to a level underframe The up light cutoff arm formed in the arm which can be rise-and-fall rotated when the hip of the trouble back tone who supported both knees to the fluting for \*\*\*\*\* was led to ascending back by the hip carrier and it was made to stand up along with an erection lever carries out off [ of the upside photoelectric-tube sensor ], and suspends a motor. And it is effective in holding a hip for an erection lever and making trouble back tone stand up comfortably safely, without a torque limiter opening and giving too much back attraction accidentally to a hip, when the above-mentioned rotation arm stops by the back smallness inclination limited stopper. Moreover, before the above-mentioned rotation arm contacted the above-mentioned stopper, also when the unexpected force more than fixed is applied to this rotation arm, a torque limiter opens and back towage is effective in the ability to prevent rest accident beforehand.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is a side elevation in early stages of a standing-up supplemental action by this invention.

[Drawing 2] It is a top view by the drawing 1 A-A line.

[Drawing 3] It is a side elevation in the middle of a standing-up supplemental action.

[Drawing 4] It is the side elevation of a standing-up supplemental action anaphase.

[Drawing 5] It is the side elevation of standing-up exit status.

[Description of Notations]

4 Machine Frame

5 Fluting Form Mat for Knee Insertion

6 Arm Which Can be Rise-and-Fall Rotated

6' Pivotal support section

10 Back Pulling Device

10' Motor

10a Torque limiter

24 25 Up-and-down photoelectric-tube sensor

26 27 Up-and-down arm for optical cutoff

28 Control Unit

29 Back Smallness Inclination Limited Stopper

30 Quirk Guidance Guide

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[Translation done.]

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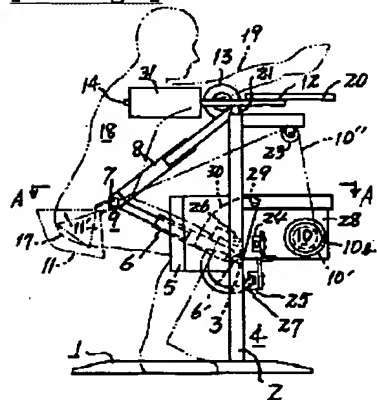
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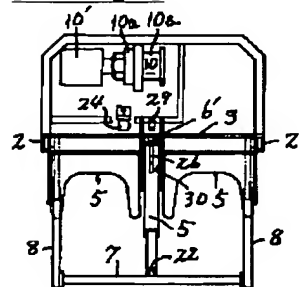
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## DRAWINGS

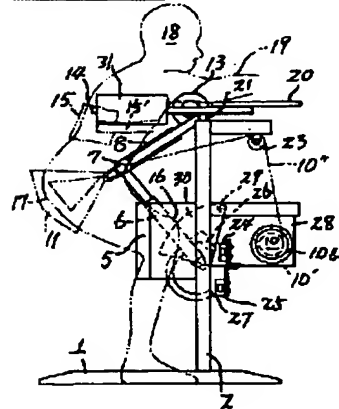
[Drawing 1]



[Drawing 2]

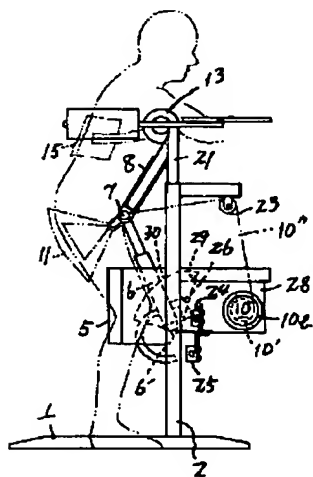


[Drawing 3]

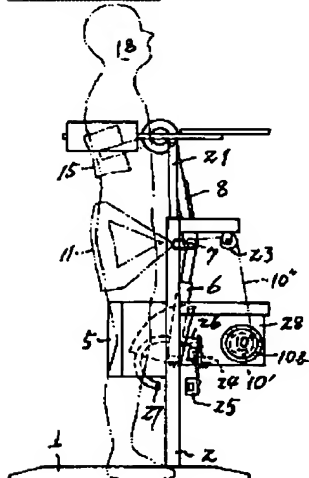


[Drawing 4]





[Drawing 5]



[Translation done.]

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 (51)【国際特許分類第6版】

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## 【FI】

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 (71)【出願人】  
 【識別番号】591051092  
 【氏名又は名称】労働福祉事業団  
 【住所又は居所】東京都千代田区神田小川町2丁目5番地  
 (72)【発明者】  
 【氏名】松尾 清美  
 【住所又は居所】福岡県飯塚市大日寺512の316  
 (74)【代理人】  
 【弁理士】  
 【氏名又は名称】藤井 信行(外1名)

## (57)【要約】(修正有)

【課題】起立不能障害者のリハビリ用起立補助器において自力で安全に起立する。  
 【解決手段】水平台枠1に左右の直立杆2、2を立設し、直立杆の上端を昇降伸縮自在に形成し、直立杆の中程を連杆3で接続して機枠4を形成し、連杆3の前部に膝嵌め込み用縦溝形マット5、5を左右に設け、かつ機枠に軸支した昇降回動自在腕6の先端に横杆7を設け、横杆の両端と直立杆の上部に枢支した伸縮自在腕8の先端とを枢着9し、昇降回動自在腕の先端部を後方牽引装置10に接続し、横杆には臀部受11を懸垂可能であって、かつ直立杆の上部をコ字形水平連杆12で接続し、上部の間に腕もたれ用円筒マット13を設け、上部に前方に向う水平腕14を左右に設けてなる起立補助器。枢支部9の上下後方に光電管センサー24、25を設け、かつ回動自在腕の基部の上下に光遮断用腕26、27を形成す。

## 【特許請求の範囲】

【請求項1】水平台枠に左右の直立杆を立設し、該直立杆の上端を昇降伸縮自在に形成し、両直立杆の中程を連杆で接続して機枠を形成し、該連杆の前部に膝嵌め込み用縦溝形マットを左右に設け、かつ上記機枠に軸支した昇降回動自在腕の先端に横杆を設け、該横杆の両端と上記左右の直立杆の上部に枢支した伸縮自在腕の先端とを枢着し、上記昇降回動自在腕の先端部を後方牽引装置に接続し、上記横杆には臀部受を懸垂可能であって、かつ左右の直立杆の上部をコ字形水平連杆で接続し、該上部の間に腕もたれ用円筒マットを設け、該上部に前方に向う水平腕を左右に設けてなる起立補助器において、上記回動自在腕の下端部を上記連杆の中央部に枢支し、該枢支部の上下後方に上下の光電管センサーを中央部に向って設け、かつ上記回動自在腕の基部の上下に光遮断用腕を屈曲又は弯曲形成し、下部の光遮断用腕の先端が昇降回動自在腕の前方大傾斜時に下部光電管センサーの光を遮断し、上部の光遮断用腕の先端が昇降回動自在腕の後方小傾斜時に上部光電管センサーの光を遮断し、下部

光電管センサーの上記遮断により昇降回動自在腕の後方牽引装置を始動し、上部光電管センサーの上記遮断により昇降回動自在腕の後方牽引を停止する制御装置を設けてなり、該制御装置が後方牽引装置に設けた電動機に備えたトルクリミッタと、昇降自在回動腕の後方小傾斜限定ストッパーとよりなる起立補助器における電動操作装置。

【請求項2】左右の膝嵌め込み用縦溝形マットの中間に昇降自在回動腕の溝形案内ガイドを設け、該ガイドの後端に上記限定ストッパーを前向きに設けた請求項(1)記載の起立補助器における電動操作装置。

## 詳細な説明

### 【発明の詳細な説明】

#### 【0001】

【発明の属する技術分野】本発明は脊髄損傷者又は頸髄損傷者などの下肢に障害をもつ起立不能者の起立補助器における電動操作装置に関するものである。

#### 【0002】

【従来の技術】従来、起立補助器は特公平6-9591号に示されるように昇降回動自在腕の上端部を手動ウインチによって後方に若干傾斜するまで牽引したので手動ウインチ操作介護を必要とし、過度に牽引して却って腰を痛めるという危険性があったためストッパーを付けてこれを防止している。手動では止まるが、電動では止まらないため2重、3重の安全策を必要とする。

#### 【0003】

【発明が解決しようとする課題】本発明は介護者を要せず、スイッチ操作によって起立補助器に安全確実に障害者が起立し得る電動操作装置を得ることを目的とする。

#### 【0004】

【課題を解決するための手段】上記の目的を達成するため本発明は水平台枠に左右の直立杆を立設し、該直立杆の上端を昇降伸縮自在に形成し、両直立杆の中程を連杆で接続して機枠を形成し、該連杆の前部に膝嵌め込み用縦溝形マットを左右に設け、かつ上記機枠に軸支した昇降回動自在腕の先端に横杆を設け、該横杆の両端と上記左右の直立杆の上部に枢支した伸縮自在腕の先端とを枢着し、上記昇降回動自在腕の先端部を後方牽引装置に接続し、上記横杆には臀部受を懸垂可能であって、かつ左右の直立杆の上部をコ字形水平連杆で接続し、該上部の間に腕もたれ用円筒マットを設け、該上部に前方に向う水平腕を左右に設けてなる起立補助器において、上記回動自在腕の下端部を上記連杆の中央部に枢支し、該枢支部の上下後方に上下の光電管センサーを中央部に向って設け、かつ上記回動自在腕の基部の上下に光遮断用腕を屈曲又は彎曲形成し、下部の光遮断用腕の先端が昇降回動自在腕の前方大傾斜時に下部光電管センサーの光を遮断し、上部の光遮断用腕の先端が昇降回動自在腕の後方小傾斜時に上部光電管センサーの光を遮断し、下部光電管センサーの上記遮断により昇降回動自在腕の後方牽引装置を始動し、上部光電管センサーの上記遮断により昇降回動自在腕の後方牽引を停止する制御装置を設けてなり、該制御装置が後方牽引装置に設けた電動機に備えたトルクリミッタと、昇降自在回動腕の後方小傾斜限定ストッパーとよりなる起立補助器における電動操作装置左右の膝嵌め込み用縦溝形マットの中間に昇降自在回動腕の溝形案内ガイドを設け、該ガイドの後端に上記限定ストッパーを前向きに設けた上記第1発明記載の起立補助器における電動操作装置によって構成される。

#### 【0005】

【発明の実施の形態】ベッド又は車椅子に座した障害者18の臀部17に臀部受11を敷き、その状態で臀部受11の両側掛紐11'、11'を横杆7の両端又は伸縮自在腕8、8の下端に着脱自在に取付環22で接続する(図2)。

【0006】その状態で障害者18が両膝16、16を膝嵌込用縦溝形マット5、5に挿入し、スイッチを押すと後方牽引装置10の電動機10'が回動しトルクリミッタ10aを介して巻取ドラム10bが回動し、牽引条10''を案内ローラ23を介して巻取ドラム10bに巻取り牽引条10''によって昇降回動自在腕6の上端を斜後上方の案内ローラ23に向って牽引し、臀部受11を引上げ、横杆7が直立杆2、2の若干後方に移行し、昇降回動自在腕6が直立杆2、2の若干後方に小傾斜すると上部の光遮断用腕26の先端が上部光電管センサー24の光を遮断し、その信号によって電動機10'を停止して牽引を停止するが、その前に昇降回動自在腕6の基部が後方小傾斜限定ストッパー29に当接するとトルクリミッタ10aを開いて牽引を停止し、その直後に電動機10'が停止し障害者18は膝及び臀部17が上記縦溝形マット5、5及び臀部受11によって支持されて直立する(図5)。又臀部受11、両側掛紐11'、11'等が車椅子に引掛って後方牽引装置10に一定以上の力で掛るとトルクリミッタ10aが開いて後方牽引は行われないからスイッチを切って電動機10'を停止させる。

【0007】又上述と反対の動作によって昇降回動自在腕6を前方に回動し、臀部受11をベッド又は車椅子まで下降させることによって障害者18をベッド又は車椅子に座らせることができる。その際上記回動自在腕6の下部に設けた下部の光遮断用腕27の先端で下部の光電管センサー25を遮断し、その信号によって電動機10'を停止しトルクリミッタ10aを開く。

【0008】そしてベッド又は車椅子と臀部17との間から臀部受11を取外し障害者18はベッド上に仰臥し又は車椅子に座ることができる。

#### 【0009】

【実施例】水平台枠1に左右の直立杆2、2を立設し、該直立杆2、2の上端を昇降伸縮自在に形成し、両直立杆2、2の中程を連杆3で接続して機枠4を形成し、該連杆3の前部に膝嵌込み用縦溝形マット5、5を左右に設け、かつ上記機枠4に軸支した昇降回動自在腕6の先端に横杆7を設け、該横杆7の両端と上記左右の直立杆2、2の上部に枢支した伸縮自在腕8、8の先端とを枢着9し、上記昇降回動自在腕6

の先端部を後方牽引装置10に接続し、上記横杆7には臀部受11を懸垂可能であって、かつ左右の直立杆2、2の上部をコ字形水平連杆12で接続し、該上部の間に腕もたれ用円筒マット13を設け、該上部に前方に向う水平腕14、14を左右に設けてなる起立補助器を形成する。上記回動自在腕6は下端部を上記連杆3の中央部に枢支6'し、該枢支部6'の上下後方に上下の光電管センサー24、25を中央部に向って横向に設け、かつ上記回動自在腕6の基部の上下に光遮断用腕26、27を屈曲又は弯曲形成し、下部の光遮断用腕27の先端が昇降回動自在腕6の前方大傾斜時に下部光電管センサー25の光を遮断し、上部の光遮断用腕26の先端が昇降回動自在腕6の後方小傾斜時に上部光電管センサー24の光を遮断し、下部光電管センサー25の上記遮断により後方牽引装置10を始動し、上部光電管センサー24の光の遮断により後方牽引装置10を停止する制御装置28を設ける。

【0010】上記制御装置28はトルクリミッタ10aを備えた正逆電動機10'と機枠4側に設けた昇降自在回動腕6の後方小傾斜限定ストッパ29とよりなり、上記回動腕6がストッパ29で止った際トルクリミッタ10aが開き後方牽引を停止するようになっている。

【0011】左右の膝嵌込み用縦溝形マット5、5の間には昇降自在回動腕6の溝形案内ガイド30を設け、該ガイド30の後端に上記限定ストッパ29を前向に設けてなるものである。

【0012】尚図中14で示すものは直立杆2、2の上端に設けた後向腕、31は該腕14に巻回した上体側面支持マット、13は直立杆2、2の上端中間に設けた腕もたれ用円筒マット、15は背受、15'は背受紐で直立杆2、2の上端に接続させる、19は障害者の腕、20は上端テーブル、21は直立杆2、2の押上げ昇降上端杆である。

【0013】

【発明の効果】本発明は上述のように昇降回動自在腕の上端を後方牽引装置によって牽引して足を水平台枠に、両膝を膝嵌込用縦溝に支持した障害者の臀部を臀部受で斜上後方に牽引して直立杆に沿って起立させた際昇降回動自在腕に設けた上部光遮断腕が上部の光電管センサーを開路して電動機を停止し、かつ上記回動腕が後方小傾斜限定ストッパで停止した際トルクリミッタが開いて誤って過度な後方牽引力を臀部に与えることなく安全に臀部を直立杆に保持し障害者を快適に起立させ得る効果がある。又上記回動腕が上記ストッパに当接する以前に該回動腕に一定以上の不慮の力が掛った場合にもトルクリミッタが開いて後方牽引は止り事故を未然に防止し得る効果がある。

## 図の説明

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### 【図面の簡単な説明】

【図1】本発明による起立補助動作初期の側面図である。

【図2】図1A-A線による平面図である。

【図3】起立補助動作中期の側面図である。

【図4】起立補助動作後期の側面図である。

【図5】起立終了状態の側面図である。

### 【符号の説明】

4 機枠

5 膝嵌込み用縦溝形マット

6 昇降回動自在腕

6' 枢支部

10 後方牽引装置

10' 電動機

10a トルクリミッタ

24、25 上下の光電管センサー

26、27 上下の光遮断用腕

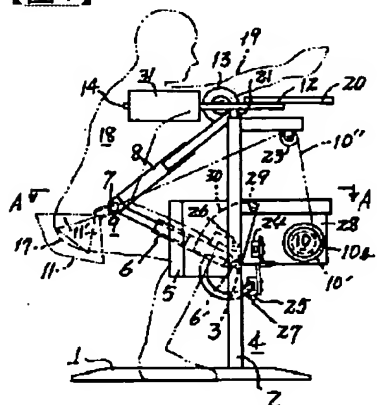
28 制御装置

29 後方小傾斜限定ストッパー

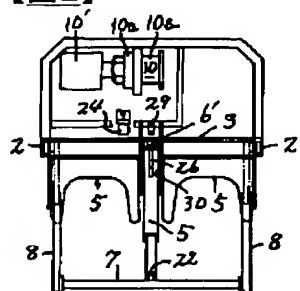
30 溝形案内ガイド

## 図面

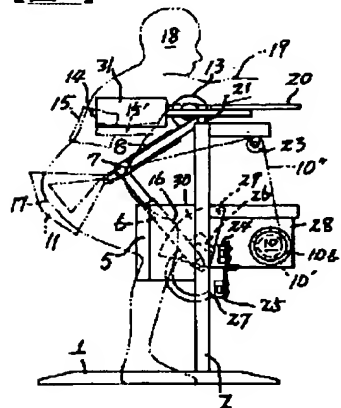
【図1】



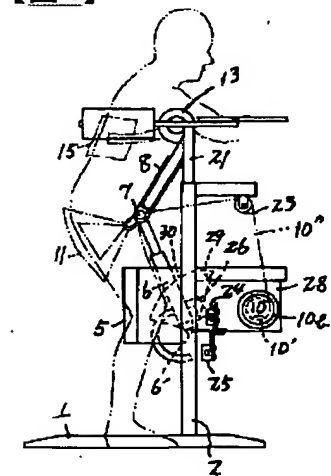
【図2】



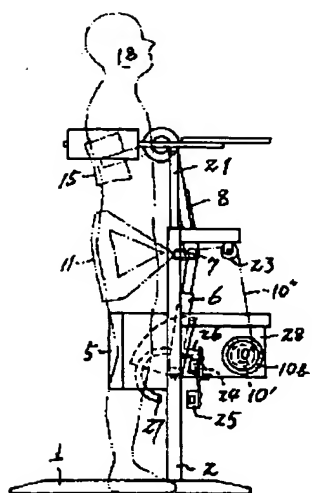
【図3】



【図4】



【図5】





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